

Project Notes

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Innovative Project Management Systems for Urban Infrastructure Projects

As cities in India begin to develop and implement urban infrastructure projects with private sector financing, the issue of project management capacity has come to the fore. The FIRE(D) Project has worked in partnership with a number of cities to build project management capacity and to replicate innovative approaches to project management systems. This Project Note reviews key issues in project management; describes the innovative project management model developed by the City and Industrial Development Corporation of Maharashtra (CIDCO); and describes recent efforts by the Ahmedabad Municipal Corporation (AMC) and Tamil Nadu Urban Infrastructure Financial Services, Limited (TNUIFSL) to adapt this model.

Focus on Project Management Capacity

As sources of public sector and institutional financing have begun to decline in India, cities are turning their attention toward capital markets as potential sources of funding for urban environmental infrastructure projects. The urban infrastructure sector, however, has traditionally been regarded as high risk, and access to private sector capital has been low. The FIRE(D) Project has been working with cities to support the development of commercially viable infrastructure projects — projects developed on sound financial principles, offering reasonable returns on investment, and a low enough risk to attract investors.

Through this process, project management capacity at the municipal level has emerged as an important issue. Management capacity has a direct impact on the quality of output, the timeliness of completion and, ultimately, the cost of a project. And from an investor's point of view, management capacity can have a significant impact on the level of risk and on the amount of return on investment.

Indeed, management capacity is one of the key areas that shapes a city's credit rating. Credit Rating and Investment Services of India Limited (CRISIL) has revealed that, in the process of issuing a credit rating, it conducts a managerial assessment of the municipal body, which reviews the organizational structure, administrative systems and procedures, skills of municipal managers, controls on expenditures, the management of political forces, and the quality of initiatives taken to enhance resources and improve collection mechanisms. If cities are to attract private sector investment in urban environmental infrastructure, improvements will have to be made in the area of project management.

Assessing Project Management Capacity

When the Ahmedabad Municipal Corporation began to develop a package of investments in water supply, sewerage and stormwater drainage, its project management capacity emerged as a potential hindrance to its investment capacity. Historically, the AMC had encountered difficulties in utilizing resources allocated

to infrastructure projects and in project implementation in general. In response, the FIRE(D) Project assisted the AMC to conduct an assessment of its project management capacity and to identify options for improving or enhancing that capacity.

The assessment began with a review of the functions of the AMC with regard to project management, and then identified both strengths and weaknesses of that system. Among its strengths, the study identified a rigorous tendering procedure and the segregation of project funds (which had been required under World Bank-sponsored projects). On the other hand, delays in project implementation were attributed largely to chronic delays in payment, of as much as 18 months. Though partially due to cash shortfalls, the delays were also due to lengthy clearance procedures, another systemic weakness. Finally, the evaluation identified the AMC's failure to link project planning with financial planning.

Turning to means of addressing these weaknesses, the assessment provided case studies of innovative project management experiences which might provide lessons and models for the AMC. One of these is the project management model developed by the City and Industrial Development Corporation of Maharashtra (CIDCO), which introduced the use of project management consultants from the private sector. The FIRE Project then sponsored a seminar for senior officials of the AMC, during which CIDCO officials discussed their experiences with the use of PMCs.

The CIDCO Model

CIDCO was created in 1970 with the mission of planning and developing Navi Mumbai, a counter-magnet expected to reduce population pressure within the old city of Mumbai (Bombay). In 1987, however, CIDCO introduced a new approach to construction which emphasized increased reliance on professional architects and planners, day-to-day supervision and quality control and reliance on the services of professional engineering firms known as Project Management Consultants.

CIDCO turned to this approach in response to several factors, not the least of which was a massive need for housing, which had been identified through a demand survey earlier that year. While CIDCO was faced with inadequate staff, it also knew that expanding permanent staff would increase establishment costs, and this would be difficult to maintain over a long period of time. It was believed that quality control could be improved, and that time and cost over-runs, usually associated with public housing schemes, could be avoided by bringing in outside expertise. And finally, CIDCO sought to bring about a qualitative change in housing

Key Responsibilities of the Project Management Consultant

- * Exercise all powers of an Executive Engineer/ Inspecting Officer of the Corporation
- * Call pre-tender meetings and participate in technical discussions
- * Develop a project schedule and budget
- * Provide daily supervision and quality checks
- * Certify periodic bills of contractors for payment
- * Coordinate with appropriate agencies
- * Resolve disputes and conflicts
- * Make recommendations on contract period extensions
- * Ensure evaluations of proof consultants
- * Prepare maintenance manual for use by owner
- * Ensure strict observance of labor laws

construction through competition; there was a feeling that large housing scheme construction by CIDCO itself would lead to monotony.

Two Approaches

Two approaches were taken to the management of housing development. Through the first, pre-qualified developers were invited to quote on a turnkey basis for their own design and construction of 1000 housing units. Under the second approach, a project of 700-1500 houses would be assigned to a professional architect who would then select a professional construction management team. In both cases, the work would be supervised by a PMC, and CIDCO would be the eventual owner of the housing.

To identify qualified architects and PMCs, CIDCO solicited applications and produced a short list, based on reputation and previous performance through a pre-determined evaluation system. A short list of PMCs was provided to prospective developers who chose three preferred consultants. CIDCO then appointed a PMC from among those three.

The responsibilities of the PMC ranged from development of project schedules and budgets, to preparation of maintenance manuals for the end-user, with small

variances under each approach. Under the Turnkey Developer Scheme, the PMC held the title of Project Manager and was responsible for review and approval of detailed designs, drawings of building and services. In the other approach, designs were finalized by the architect consultant, and the PMCs role was reduced to construction management, with the title of Construction Engineer. A list of the PMC's other main responsibilities can be found in the box to the left.

Fees were set as prescribed by professional bodies, to ensure due compensation and maintain professional standards, and amounted to 2-- 2.5% of the project costs. PMCs were paid according to a fixed schedule. An initial 2.5% was paid on placement of the work order; 7.5% on commencement of work; 10% was reserved during the defect liability period after completion of construction, and 5% upon settlement of the final bill. The bulk of their fee — 75% — was paid on a monthly basis during the construction period.

Results of the CIDCO Approach

A study of this project management system conducted by the Housing and Urban Development Corporation, Ltd (HUDCO) in 1996 concluded that this new approach did allow CIDCO to undertake a larger program by involving PMCs and, at the same time, involve more professionals in the process. Consultancy was a productive investment, for fees paid to PMCs amounted to only 2.5% of construction costs. However, there were drawbacks to the approach as well. CIDCO found that facilitating effective communication between CIDCO staff and PMCs on the one hand, and PMCs and the

developers on the other, was challenging, due to basic resistance to change and reluctance to accept new systems. Also, replacement of overloaded contractors led to cost over-runs, and more careful management of workloads was necessary.

In more recent urban development projects, such as Seawood Estates in Navi Mumbai and Airoli Road Bridge linking Navi Mumbai to Greater Mumbai, CIDCO has continued to utilize services of PMCs, while turning its focus to timely completion of construction and total quality assurance. Major commercial conditions have been fine-tuned to meet contractors' needs and ensure timely performance. Payment schedules have been adjusted to two week intervals, with interest paid in the event of late payment. And by continuing to adapt this project management system, CIDCO has reduced time and cost over-runs in subsequent projects. Ultimately, CIDCO finds the involvement of PMCs to be extremely rewarding.

Ahmedabad Creates Program Management Team

The Ahmedabad Municipal Corporation is now poised to undertake a capital improvements program valued at approximately Rs. 4 billion, consisting of several major projects within the water and wastewater sectors. And the AMC intends to implement this program with the assistance of Professional Program Management Consultants which will provide both engineering and management assistance.

The AMC's Capital Projects Program will be implemented through a series of approximately 60 contracts,

Design and Management Consultancy for Small Towns in Tamil Nadu

In April of this year, Tamil Nadu Urban Infrastructure Financial Services, Ltd (TNUIFSL) advertised for project management consultancy services which place yet additional variations on the CIDCO model. The TNUIFSL is providing financial assistance to Valasaravakkam, Porur and Maduravoyal Town Panchayats in the Chennai Metropolitan Area for the implementation of infrastructure projects that include roads, stormwater drains and commercial complexes. In order to capture economies of scale and thereby improve efficiency and lower overall costs, however, the TNUIFSL plans to contract one PMC to oversee projects in all the three small towns. In addition, the TNUIFSL intends to contract not only for supervision and management services, but initial assistance in the design of the specified infrastructure projects.

Once designed, the projects will be put out for tender, and implementation will be supervised and managed by the PMC. As with the CIDCO and Ahmedabad models, the PMC's fee will consist of a percentage of the cost of the proposed infrastructure schemes. This approach to project management consultancies is unique not only in that it includes design of the projects, but it incorporates projects in three small towns on the initiative of a state government agency.

and the PMC will provide a range of support, beginning with the tender and award process, and carrying through to monitoring and supervision of construction contracts, quality control, verification of billing and conflict resolution.

In addition, the consultant team hired by the AMC will evaluate and recommend improvements of the department's current procedures for managing the Capital Projects Program; prepare and maintain the overall program budget; assist in developing a funding program; prepare a network schedule for the program; monitor the progress of all program work; represent the AMC with regulatory agencies; assemble and prepare specific project status reports, conduct progress meetings and briefings; maintain a documents control system; and assist the AMC in responding to inquiries related to the program.

The PMC is to be paid a total fee of 2% of the value of the construction contracts to be managed, which is estimated at approximately Rs. 3 billion. A 5% mobilization payment will be made up front, and 90% will be paid in monthly installments over the 30 month construction period. The remaining 5% will be paid upon settlement of final accounts. In addition, the PMC is likely to be eligible for a bonus if the program is completed within the 30 month schedule.

The AMC approach, however, offers an important departure from the CIDCO model. To implement the capital improvement program, a stand-alone, integrated Project Management Team will be composed of both AMC and consultant staff. The team will be supervised by a Program Manager from the consulting firm.

Though housed within the AMC offices, all staff will be dedicated strictly to this team, and it is hoped that this step will overcome the cooperation and communication difficulties which were experienced by CIDCO. In addition, the consultant team is expected to emphasize the transfer of skills to the AMC staff and introduce the best practices appropriate to the AMC's long range needs in terms of skills, staffing, facilities operation and management, and program management capacity, including computer skills and systems. It is hoped that this new adaptation will alleviate communication challenges experienced by CIDCO.

Project Note is based on two FIRE(D) Project Technical Reports: *The Ahmedabad Municipal Corporation: Project Management Experiences and Practices* by Jerome Moga; and *Innovative Project Management Systems for Urban Development Projects: CIDCO's Experience in Navi Mumbai*, by A. Bhattacharya.

Indo-US Financial Institutions Reform and Expansion Project - Debt Market Component FIRE(D)

The mission of the Indo-US FIRE (D)Project is to foster the development of a commercially viable urban infrastructure finance system to finance improvements in environmental services for all citizens, including the urban poor. It is being implemented through four objectives.

- Development of commercially viable urban environmental infrastructure projects in selected demonstration cities;
- Development of a commercially viable urban environmental infrastructure finance system;
- Improvement of municipal financial management as well as the administration of environmental services in demonstration cities;
- Strengthening the capacity of public and private sector professionals and technicians to achieve these objectives.

Commercial viability requires the careful analysis of municipal investment capacity within a broad urban finance framework; identifiable revenue streams and adequate return on investments; and risk allocation and mitigation. In addition, private sector participation can improve efficiency and introduce new technologies for delivery of urban environmental services.

This new approach to providing urban environmental infrastructure and services enables Indian cities and urban authorities to respond more effectively to the greatest needs: increasing access to services and improving service levels and quality, as well as meeting demand, particularly among the most disadvantaged.

Community Consulting International, India
E 3/4 Vasant Vihar
New Delhi 110 054, India
Tel: (91-11) 614-3551 or 614-9836
Fax: (91-11) 614-1420 or 614-4480

Regional Urban Development Office
USAID/New Delhi
B-28 Institutional Area
New Mehrauli Road, Near Qutab Hotel
New Delhi 110 016, India

Community Consulting International
1012 N Street, NW
Washington, DC 20001-4297, USA

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